

# ***Gymnanthemum koekemoerae* (Compositae, Vernonieae), a new species from South Africa**

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Academic editor: A. Sennikov | Received 26 February 2014 | Accepted 8 April 2014 | Published 30 April 2014

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**Citation:** Robinson H, Funk VA (2014) *Gymnanthemum koekemoerae* (Compositae, Vernonieae), a new species from South Africa. PhytoKeys 36: 59–65. doi: 10.3897/phytokeys.36.7386

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## **Abstract**

A new species of *Gymnanthemum* (Compositae, Vernonieae) from South Africa is described. It can be distinguished from other species in the genus by the five-flowered capitula and widely obtuse leaf blades.

## **Keywords**

Asteraceae, Compositae, *Gymnanthemum*, South Africa, Vernonieae

## **Introduction**

In the course of preparing a monograph covering all of the Vernonieae of southern Africa (Botswana, Namibia, South Africa) a specimen sent from PRE was determined to be a previously undescribed species of *Gymnanthemum*. Here we describe this new taxon, provide a key to the endemic species from South Africa, and an original illustration.

## Taxonomic treatment

### *Gymnanthemum* Cass.

<http://species-id.net/wiki/Gymnanthemum>

Bull. Soc. Philom. Paris 1817: 10. 1817. Type: *Gymnanthemum cupulare* Cass. = *G. coloratum* (Willd.) H. Rob. & B. Kahn

*Bracheilema* R. Br. ex Salt, Abyss. Append.: 65. 1814, nom. nud.

*Decaneurum* DC., Arch. Bot. (Paris) 2: 516. 1833, nom. superfl., type same as *Gymnanthemum*.

*Plectreca* Raf., Fl. Tellur. 4: 119. 1838. Type: *Staehelina corymbosa* Thunb.

*Keringa* Raf., Sylva Tellur.: 144. 1838. Type: *Vernonia amygdalina* Del.

*Cheliusia* Sch. Bip. in Hochstetter, Flora 24(1, Intelligenzbl.): 26. 1841, nom. nud.

*Vernonia* subsect. *Urceolata* S.B. Jones, Rhodora 83: 67. 1981. Type: *Vernonia sphaerocalyx* O. Hoffm.

**Remarks.** Shrubs or small trees moderately to densely branching; stems often felted, hairs rarely asymmetrically T-shaped. Leaves alternate; petioles short, winged or elongate; blades membranaceous to rather coriaceous, margins entire to serrate or dentate, upper surfaces essentially glabrous and somewhat glossy to arachnoid tomentose. Inflorescences terminal, densely corymbiform, with small bracteoles; peduncles short; involucre bracts coriaceous, 25–35, 4–5-seriate, inner bracts often deciduous. Florets 3–50; corolla white to violet, anther base broadly tailed, tails often long, apical appendage glabrous; style base without or with scarcely distinct node; style branches with stout, pointed sweeping hairs. Achenes 5–10-costate, raphids short, elongate or not evident; pappus of many rather persistent capillary bristles, often with broadened tips, with outer series of short squamellae. Pollen sublophate. Chromosome number  $n = 10, 20$ . More than 43 species are found in sub-Saharan Africa, Madagascar, Southern Asia, and also introduced into Brazil.

The genus *Gymnanthemum* was described by Cassini (1817), included in *Vernonia* by Candolle (1836) and Bentham (1873) and resurrected by Robinson and Kahn (1986) and Robinson (1999). The generic limits have changed and are now more narrow than in 1999. Currently the genus has nine species in southern Africa (Robinson et al. in prep.), five of which are endemic to South Africa; a key to those is provided here. The four more widespread species are *G. theophrastifolium* (Schweinf. ex Oliv. & Hiern) H. Rob., *G. coloratum* (Willd.) H. Rob. & B. Kahn, *G. amygdalinum* (Del.) Sch. Bip. ex Walp. and *G. myrianthum* (Hook. f.) H. Rob. The still unfinished monograph will cover all species of Vernonieae from Southern Africa with descriptions, keys and pollen images (Robinson et al. in prep.).



***Gymnanthemum koekemoerae* H. Rob. & V.A. Funk, sp. nov.**

urn:lsid:ipni.org:names:77138105-1

[http://species-id.net/wiki/Gymnanthemum\\_koekemoerae](http://species-id.net/wiki/Gymnanthemum_koekemoerae)

**Type.** South Africa. Limpopo Province. Thohoyandou District. Thathe-Vonde Nature Reserve. Grassland at rocky outcrop near entrance, 1233 m, 22°55'10"S, 30°19'36"E [2230CD], 23 March 2002, *Koekemoer* 2273 (holotype PRE!, isotype US!). Figs 1–3.

**Description.** Sparsely branched shrubs 1.3–1.5 m tall; stems brown, terete and striate, hispid to hirtellous and gland-dotted, hairs unicellular, with short branches and spurs. Leaves alternate; petioles 3–4 mm long; leaf blades chartaceous, suborbicular, 4.5–6.5 cm long and broad, bases rounded to broadly obtuse, abruptly terminating at petiole, margins with c. 5 broad dentations above basal  $\frac{1}{4}$ , apex with broad obtusely triangular tip; adaxial surface dark green when dry, essentially glabrous, primary and secondary veins pruinulose in shallow grooves, tertiary veins flush with surface; abaxial leaf surface somewhat paler, sparsely pilosulous on larger prominent veins, surface with numerous yellow glandular dots; secondary veins widely spreading at 50–80° angles, usually 4 on each side, quaternary veins minimally prominent. Inflorescence broadly corymbiform, terminal on stems and distal branches; peduncles 3–8 mm long, capitula 13–15 mm high; involucre 4–5 mm wide, to 7–8 mm wide when in fruit; involucral bracts subimbricate in c. 5 gradate series, round to oblong, 2–7 mm long, 2.5–3.6 mm wide, inner bracts somewhat ranked, apices broadly rounded to subtruncate, with broad rounded surface outside, greenish or brownish with darker and gland-dotted distal  $\frac{1}{4}$ ; florets 5 in a capitulum; corollas pale lavender, c. 9.5 mm long, essentially without hairs, sparsely gland-dotted outside, basal tube c. 5 mm long, funnelform distally, throat c. 0.5 mm long, lobes evenly tapered, c. 4 mm long; anther thecae c. 4.5 mm long, apical appendage triangular, c. 0.6 mm long, 0.25 mm wide; achenes c. 5 mm long, 10-ribbed, with numerous short, spreading setulae mostly on ribs, with glandular dots between ribs; pappus mostly c. 9 mm long, becoming tawny, of c. 90 crowded capillary bristles, bristles scarcely broadened distally.

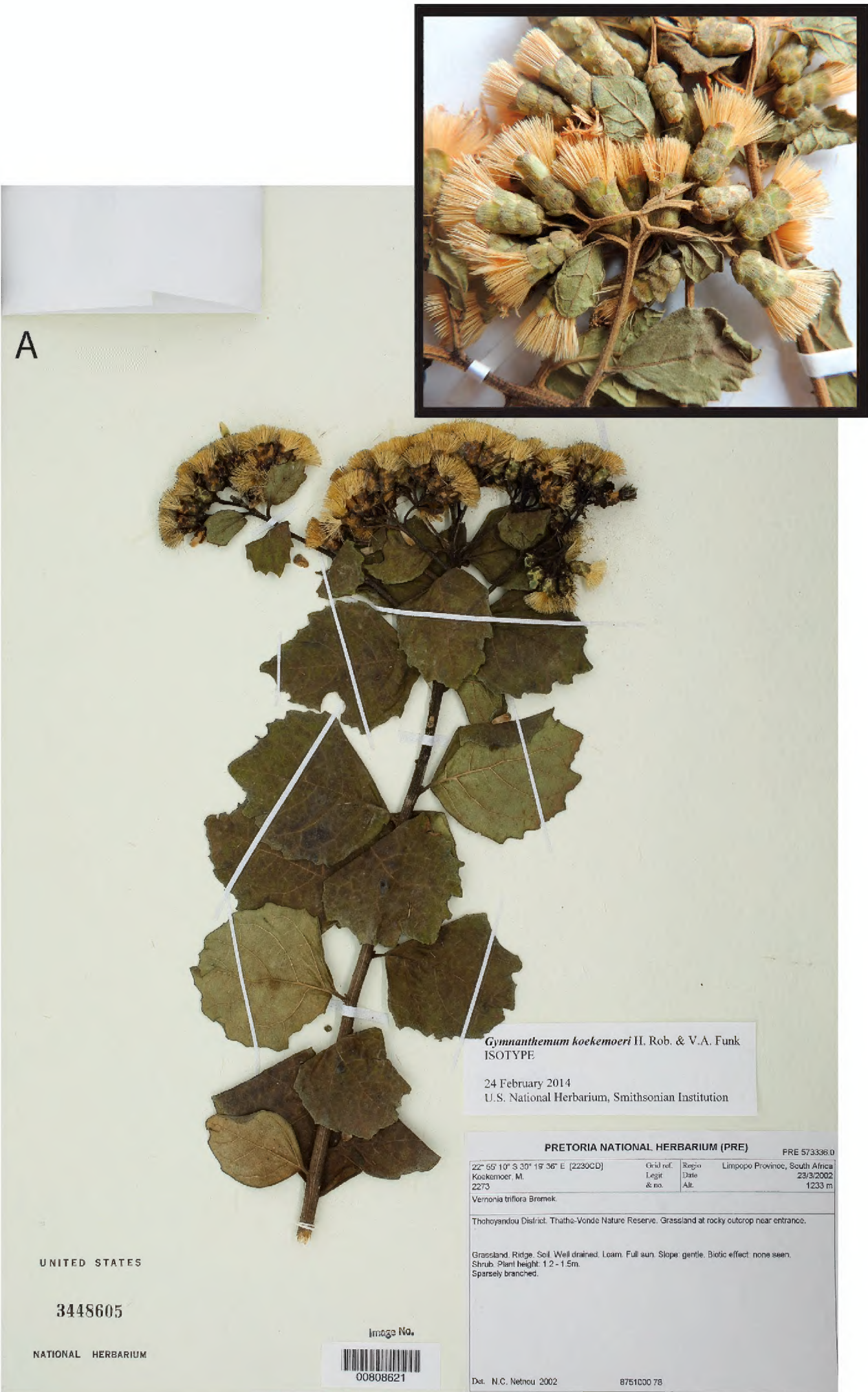
**Related taxa.** *Gymnanthemum koekemoerae* is closest to *G. mespilifolium* in its leaf pubescence, but it has an abrupt base on the leaf blade, totally unlike the narrow acumination in *G. mespilifolium* that gives the leaves of the latter a long-petiolate appearance. The blades of the new species are also more chartaceous, and the dentations of the leaf are more numerous and are as broad as long. The dentations in *G. mespilifolium* are long and narrowly acute, and are restricted to the distal  $\frac{1}{3}$  of the leaf blade.

**Notes.** The holotype (PRE) has both flowering and fruiting material while the isotype (US) material is mostly fruiting. The specimen of the new species was distributed as *Vernonia triflora* Bremek. (now *Gymnanthemum triflorum* (Bremek.) H. Rob.) which has only 3 florets in its capitula, has stiffly and densely hispid stems, and has ovate to oblong leaf blades with hispidulous abaxial surfaces.

**Etymology.** The species is named for Dr. Marinda Koekemoer (PRE) who collected the type material and who has done so much to further our knowledge of the Compositae of southern Africa.

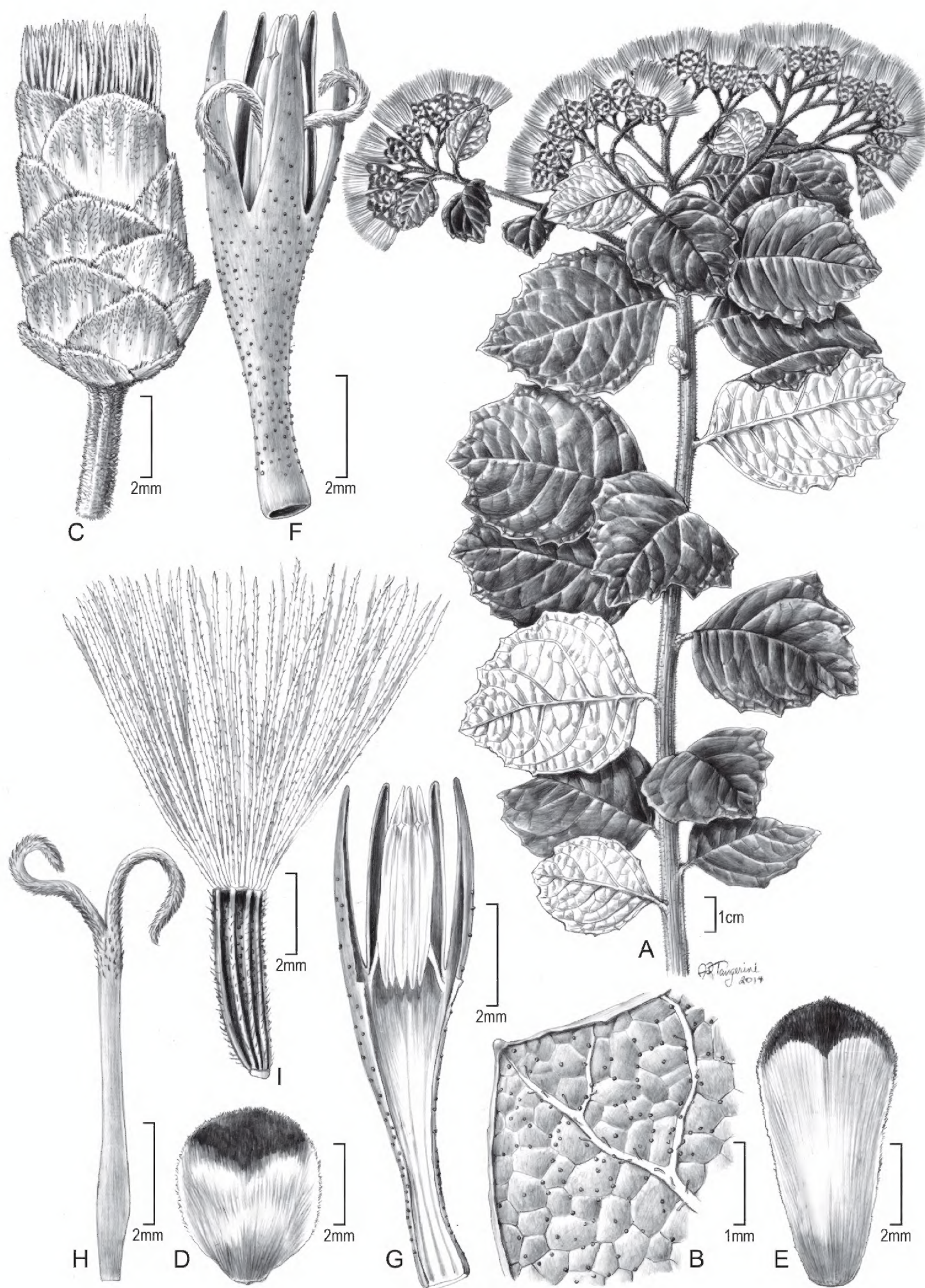
**Distribution.** This species is known only from the type locality.





**Figure 1.** Type specimens. **A** Photograph of the isotype (US) **B** Photograph of the inflorescence of the holotype (PRE).





**Figure 2.** Original Illustration of *Gymnanthemum koekemoerae* H. Rob. & V.A. Funk: **A** Habit **B** Abaxial surface of leaf **C** Head **D** Outer involucre bract **E** Inner involucre bract **F** Floret **G** Longitudinal section of floret showing anthers **H** Style **I** Achene with pappus. [Illustration by Alice Tangerini (US)]







## Acknowledgements

The authors thank Alice Tangerini for the illustration and PRE for access to the holotype.

## References

- Bentham G (1873) Ordo Compositae. In: Bentham G, Hooker JD. *Genera plantarum*, vol. 2(1). Lovell Reeve & Co., London, 163–533.
- Candolle AP de (1836) Genres nouveaux appartenant à la famille des Composées ou Synanthérées. Seconde décade. *Archives de Botanique* 2: 514–519.
- Cassini H (1817) Aperçu des genres nouveaux formés par M. Henri Cassini dans la famille des Synanthérées. *Bulletin de la Société Philomatique de Paris* 1817: 10–13.
- Hochstetter CF (1841) Erste Lieferung der vom Reiseverein ausgegebenen durch Wilhelm Schimper gesammelten Abyssinischen Pflanzen. *Flora* 24(1, Intelligenzblatt): 18–32.
- Jones SB (1981) Synoptic classification and pollen morphology of *Vernonia* (Compositae: Vernoniae) in the Old World. *Rhodora* 83: 59–75.
- Rafinesque CS (1838a) *Flora Telluriana*, part 4. Published by the author, Philadelphia, 1–135.
- Rafinesque CS (1838b) *Sylva Telluriana*. Published by the author, Philadelphia, 1–184.
- Robinson H (1999) Revisions in paleotropical Vernoniae (Asteraceae). *Proceedings of the Biological Society of Washington* 112(1): 220–247.
- Robinson H, Skvarla JJ (2006) Studies on the Gymnantheminae (Vernoniae: Asteraceae): restoration of the genus *Monosis*. *Proceedings of the Biological Society of Washington* 119: 600–607. doi: 10.2988/0006-324X(2006)119[600:SOTGVA]2.0.CO;2
- Robinson H, Skvarla JJ (2007) Studies on the Gymnantheminae (Vernoniae: Asteraceae), II: A new genus *Decaneuropsis* from China, India, Southeast Asia and Malaysia. *Proceedings of the Biological Society of Washington* 120: 350–366. doi: 10.2988/0006-324X(2007)120[359:SOTGAV]2.0.CO;2
- Robinson H, Kahn B (1986) Trinervate leaves, yellow flowers, tailed anthers, and pollen variation in *Distephanus* Cassini (Vernoniae: Asteraceae). *Proceedings of the Biological Society of Washington* 99: 493–501. doi: 10.1098/rspb.1986.0036
- Robinson H, Keeley SC, Skvarla JJ, Chan R (2008) Studies on the Gymnantheminae (Vernoniae: Asteraceae), III: Restoration of the genus *Strobocalyx* and the new genus *Tarlmounia*. *Proceedings of the Biological Society of Washington* 121: 19–33. doi: 10.2988/07-21.1